



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE
JOURNAL OF GEOLOGY

A Semi-Quarterly Magazine of Geology and
Related Sciences

EDITORS

T. C. CHAMBERLIN

R. D. SALISBURY
Geographic Geology

R. A. F. PENROSE, JR.
Economic Geology

J. P. IDDINGS
Petrology

C. R. VAN HISE
Pre-Cambrian Geology

W. H. HOLMES, *Anthropic Geology*

ASSOCIATE EDITORS

SIR ARCHIBALD GEIKIE
Great Britain

JOSEPH LE CONTE
University of California

H. ROSENBUSCH
Germany

C. D. WALCOTT
U. S. Geological Survey

CHARLES BARROIS
France

G. K. GILBERT
Washington, D. C.

ALBRECHT PENCK
Austria

H. S. WILLIAMS
Yale University

HANS REUSCH
Norway

J. C. BRANNER
Leland Stanford University

GERARD DE GEER
Sweden

I. C. RUSSELL
University of Michigan

GEORGE M. DAWSON
Canada

WILLIAM B. CLARK
Johns Hopkins University

O. A. DERBY, *Brazil*

VOLUME IV

CHICAGO

The University of Chicago Press

1896

CONTENTS OF VOLUME IV.

NUMBER I.

	PAGE
REVIEW OF THE GEOLOGICAL LITERATURE OF THE SOUTH AFRICAN REPUBLIC. S. F. Emmons - - - - -	I
IGNEOUS INTRUSIONS IN THE NEIGHBORHOOD OF THE BLACK HILLS OF DAKOTA. Israel C. Russell - - - - -	23
THE GEOLOGY OF NEW HAMPSHIRE. C. H. Hitchcock - - -	44
NORTH AMERICAN GRAPTOLITES. R. R. Gurley - - - - -	63
EDITORIALS - - - - -	103
REVIEWS: The Hill Caves of Yucatan, by Henry C. Mercer (review by T. C. Chamberlin), 106; New Evidence of Glacial Man in Ohio, by Pro- fessor G. Frederick Wright (review by T. C. Chamberlin), 107; Fos- sil Sponges of the Flint Nodules in the Lower Cretaceous of Texas, by J. A. Merrill (review by T. Wayland Vaughan), 112; Thirteenth Annual Report of the State Geologist (New York), by James Hall (review by S. Weller), 116; <i>Istidens</i> foraminifer i Denmark og Hol- sten og deres betydning for studiet af istidens aflejringer, by Victor Madsen (review by J. A. Udden), 119; Om Lommalerans alder, by N. O. Holst and Joh. Chr. Moberg (review by J. A. Udden), 123; Har det funnits mera änn en Istid i Sverige? by N. O. Holst, 124; Les Glaciers Pliocènes et Quaternaires de l'Auvergne, by M. Marcellin Boule (review by H. C. Cowles), 125; Neocene Mollusca of Texas, or Fossils from the Deep Wells at Galveston, by G. D. Harris (review by S. Weller), 126.	
AUTHORS' ABSTRACTS: Preglacial and Postglacial Valleys of the Cuya- hoga and Rocky Rivers, by Warren Upham, 127; A Needed Term in Petrography, by L. V. Pirsson, 128.	

NUMBER II.

KAME AREAS IN WESTERN NEW YORK SOUTH OF IRONDEQUOIT AND SODUS BAYS. H. L. Fairchild - - - - -	129
A PRE-TERTIARY NEPHELINE-BEARING ROCK. F. Bascom - - -	160
PETALOCRINUS MIRABILIS (N. SP.) AND A NEW AMERICAN FAUNA. S. Weller and R. A. Davidson - - - - -	166

	PAGE
REMARKS ON PETALODUS ALLEGHANIENSIS. Charles R. Eastman - -	174
ON THE NATURE OF IGNEOUS INTRUSIONS. Israel C. Russell - - -	176
STUDIES FOR STUDENTS: Deformation of Rocks. C. R. Van Hise - -	195
EDITORIALS - - - - -	214
REVIEWS: Age of the Second Terrace on the Ohio at Brilliant near Steubenville, by G. Frederick Wright (review by T. C. Chamberlin), 218. North American Fossil Crinoidea Camerata, by Charles Wachsmuth and Frank Springer (review by Charles R. Keyes), 221. En resa till norra ishafvet sommaren 1892 företagen med understöd af vegastipendiet (A Journey to the Arctic Ocean during the Summer of 1892, made with the Aid of the Vega Stipend), by Axel Hamberg (review by J. A. Udden), 240; Palæontographia Italica. Memoire di Palæontologia, by Mario Canavari (review by J. P. S.), 242; The Soil: Its Nature, Relations and Fundamental Principles of Management, by F. H. King (review by J. C. B.), 243.	

AUTHORS' ABSTRACTS: The Loess of Western Illinois and Southeastern Iowa, by Frank Leverett, 244; Possible Depth of Mining and Boring, by Alfred C. Lane, 244; The Soils of Texas, by E. T. Dumble, 245; The Yardley Fault and The Chalfont Rock, so-called, by Benjamin Smith Lyman, 245; Crystalline Limestones of the Northwestern Adirondack Region, by C. H. Smyth, jr., 246; U. S. Geologic Atlas, Folio 1, Livingston, Montana, 246; U. S. Geologic Atlas, Folio 3, Placerville, California, 248; U. S. Geologic Atlas, Folio 5, Sacramento, California, 250; U. S. Geologic Atlas, Folio 7, Pikes Peak, Colorado, 251; U. S. Geologic Atlas, Folio 9, Anthracite—Crested Butte, Colorado, 253.

NUMBER III.

THE MAGMATIC ALTERATION OF HORNBLLENDE AND BIOTITE. Henry S. Washington - - - - -	257
ON THE ORIGIN OF THE CHOUTEAU FAUNA. Henry Shaler Williams -	283
NORTH AMERICAN GRAPTOLITES. R. R. Gurley - - - - -	291
STUDIES FOR STUDENTS: Deformation of Rocks. II. C. R. Van Hise -	312
EDITORIAL - - - - -	354
REVIEWS: Geological Biology, an Introduction to the Geological History of Organisms, by H. S. Williams (review by S. Weller), 355; Canadian Fossil Insects, by S. H. Scudder (review by S. Weller), 360. Summary of Current Pre-Cambrian North American Literature, by C. R. Van Hise, 362.	
AUTHORS' ABSTRACTS: Origin of the Iowa Lead and Zinc Deposits, by A. G. Leonard, 373; The Gold-Silver Veins of Ophir, California, by W.	

CONTENTS OF VOLUME IV

V

PAGE

Lindgren, 373; Ueber das Norian oder Oberlaurentian von Canada, by Frank D. Adams, 374; Relations of the Granite and Porphyry Areas in Southeastern Missouri, by Chas. R. Keyes, 375; Syenite-gneiss (Leopard Rock) from the Apatite Region of Ottawa County, Canada, by C. H. Gordon, 377.	
RECENT PUBLICATIONS - - - - -	379

NUMBER IV.

CLASSIFICATION OF MARINE TRIAS. James Perrin Smith - - - -	385
THE GEOLOGY OF THE LITTLE ROCKY MOUNTAINS. Walter Harvey Reed and Louis V. Pirsson - - - - -	399
SCHISTOSITY AND SLATY CLEAVAGE. George F. Becker - - - -	429
STUDIES FOR STUDENTS: Deformation of Rocks. III. C. R. Van Hise, 449; Large Scale Maps as Geographical Illustrations. W. M. Davis, 484.	
EDITORIAL - - - - -	514
REVIEWS: Expedicion Cientifica al Popocatepetl, by Jose G. Aguilera and Ezequiel Ordoñez (review by Oliver C. Farrington), 516; Stratigraphy of Kansas Coal Measures, by Erasmus Haworth; Classification of the Upper Palæozoic Rocks of Central Kansas, by Chas. S. Prosser; Permian System of Kansas, by F. W. Cragin (review by Chas. R. Keyes), 520; Wissenschaftliche Ergebnisse der Finnischen Expeditionen nach der Halbinsel Kola, by Dr. W. Ramsay and others (review by D. P. N.), 526.	
RECENT PUBLICATIONS - - - - -	526

NUMBER V.

DECOMPOSITION OF ROCKS IN BRAZIL. Orville A. Derby - - -	529
ITALIAN PETROLOGICAL SKETCHES.—I. THE BOISENA REGION. Henry S. Washington - - - - -	541
DRAINAGE MODIFICATIONS AND THEIR INTERPRETATION. Marius R. Campbell - - - - -	567
GLACIAL STUDIES IN GREENLAND. IX. T. C. Chamberlin - - -	582
STUDIES FOR STUDENTS: Deformation of Rocks, IV. C. R. Van Hise -	593
EDITORIAL - - - - -	630
REVIEWS: Greenland Ice Fields and Life in the North Atlantic, with a new discussion of the causes of the Ice age, by G. Frederick Wright and Warren Upham (review by T. C. C.), 632; Ice Work, Present and Past, by T. G. Bonney (review by T. C. C.), 636; General Relations of the Granitic Rocks in the Middle Atlantic Piedmont Plateau, by G. H.	

Williams (review by H. F. Bain), 638; Sketch of the Geology of the San Francisco Peninsula, by Andrew C. Lawson (review by A. H. Purdue), 640.	PAGE
ABSTRACTS: University Geological Survey of Kansas, Vol. I, 645; Till frågan om lommaleransålder, by Gerard de Geer, 646; Om strandliniens förskjutning vid våra insjöar, by Gerard de Geer, 647; The Search for the North Pole, by Evelyn Briggs Baldwin, 649; Iowa Geological Survey, Vol. V, 649; Monoclinic Pyroxenes of New York State, by Heinrich Ries, 651; Fifteenth Annual Report of the U. S. Geological Survey, 652; Notes Concerning a Peculiarly Marked Sedimentary Rock, by Dr. J. E. Talmage, 653.	
RECENT PUBLICATIONS - - - - -	654

NUMBER VI.

DRAINAGE MODIFICATIONS AND THEIR INTERPRETATION. PART II. CRITERIA FOR DETERMINING STREAM MODIFICATIONS. Marcus R. Campbell - - - - -	657
THE MONCHIQUITES OR ANALCITE GROUP OF IGNEOUS ROCKS. L. V. Pirsson - - - - -	679
THE QUEEN'S RIVER MORaine IN RHODE ISLAND. J. B. Woodworth and C. F. Marbut - - - - -	691
STUDIES FOR STUDENTS: The Principles of Rock Weathering. George P. Merrill - - - - -	704
EDITORIALS - - - - -	725
REVIEWS: Great Valley of California, a Criticism of the Theory of Isostasy, by F. Leslie Ransome; British Geology, by T. Mellard Reade; Notes on the Gravity Determinations reported by Mr. G. R. Putnam, by Grove Karl Gilbert (review by Charles R. Keyes), 729; Text-Book of Palæontology, Vol. I, Part I, by Karl A. von Zittel, translated and edited by Charles R. Eastman (review by Charles R. Keyes), 734; Die Eruptivgesteine des Kristianiagebietes. II. Die Eruptionsfolge der triadischen Eruptivgesteine bei Predazzo in Südtirol, by Professor W. C. Brögger (review by F. L. Ransome), 738.	
Summary of Current Pre-Cambrian North American Literature, by C. R. Van Hise, 744.	
ABSTRACTS: Relation between Ice-Lobes south of the Driftless Area, by Frank R. Leverett, 757; The Production of Coal in 1894, by Edward W. Parker, 757; Merocrinus Salopiæ n. sp. and another Crinoid from the Middle Ordovician of West Shropshire, by F. A. Bather, 758; U. S. Geologic Atlas, Folio 10, Harper's Ferry, Virginia and Maryland, 758; Folio 2, Ringgold, Georgia and Tennessee, 760; Folio 4, Kingston, Tenn., 762; Folio 6, Chattanooga, Tenn., 764; Folio 8, Sewanee, Tenn., 766.	

NUMBER VII.

	PAGE
SALIENT POINTS CONCERNING THE GLACIAL GEOLOGY OF NORTH GREENLAND. Rollin D. Salisbury - - - - -	769
GENESIS OF LAKE AGASSIZ. J. Burr Tyrrell - - - - -	811
LACCOLITES IN SOUTHEASTERN COLORADO. G. K. Gilbert - - -	816
ITALIAN PETROLOGICAL SKETCHES. II. THE VITERBO REGION. Henry S. Washington - - - - -	826
STUDIES FOR STUDENTS: The Principles of Rock Weathering (concluded). George P. Merrill - - - - -	850
EDITORIAL - - - - -	873
REVIEWS AND ABSTRACTS: Physical Features of Missouri, by Curtis Fletcher Marbut (review by R. D. S.), 877; Geological Atlas of the United States, Folio 18, 878; Sixteenth Annual Report of the U. S. Geol. Survey, Charles D. Walcott, Director, 879.	

NUMBER VIII.

AGE OF THE AURIFEROUS GRAVELS OF THE SIERRA NEVADA. WITH A REPORT ON THE FLORA OF INDEPENDENCE HILL. Waldemar Lindgren - - - - -	881
ANORTHOSITES OF THE RAINY LAKE REGION. A. P. Coleman - - -	907
MECHANICS OF GLACIERS. I. Harry Fielding Reid - - - - -	912
LOESS IN THE WISCONSIN DRIFT FORMATION. Rollin D. Salisbury - -	929
GEOLOGY OF CHIAPAS, TABASCO AND THE PENINSULA OF YUCATAN. Carlos Sapper. Translated by C. Joaquina Maury and G. D. Harris	938
STUDIES FOR STUDENTS: Stratified Drift. Rollin D. Salisbury - -	948
EDITORIAL - - - - -	971
REVIEWS: Elements of Geology, by Joseph Le Conte (review by T. C. C.), 972; The Oldest Fossiliferous Beds of the Amazon Region, by Friedrich Katzer (review by J. C. Branner), 975; The Formation of the Quaternary Deposits of Missouri, by J. E. Todd (review by T. C. C.), 976; Der Eläolithsyenit der Serra de Monchique, seine Gang- und Contactgesteine, by K. v. Kraatz-Koschlan and V. Hackman (review by F. L. Ransome), 977; Geological Survey of Canada (review by H. F. Bain), 979; Proceedings of the Indiana Academy of Science, 1895, Geological Subjects (review by J. C. B.), 981; Areal Geology of Missouri (notice by H. F. B.), 982; Om Kvartära Nivåförändringar vid Finska viken, by Gerard de Geer (review by J. A. Udden), 982.	